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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,388	04/19/2001	Jae Yoon Lee	2658-0234P	7290
2292	7590	04/25/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			CLEVELAND, MICHAEL B	
			ART UNIT	PAPER NUMBER
			1762	
DATE MAILED: 04/25/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/837,388

**Applicant(s)**

LEE ET AL.

**Examiner**

Michael Cleveland

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9,10,12-16 and 18-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9,10,12-16 and 18-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/3/2006 has been entered.

### ***Definitions***

2. "Letterpress" is defined by Merriam-Webster's Collegiate Dictionary, 10 edn., as "the process of printing from an inked raised surface esp. when the paper is impressed directly on the surface" (in contrast to "intaglio": "printing (as in die stamping and gravure) done from a plate in which the image is sunk below the surface"). "Flexography" is defined as "a process of rotary letterpress printing using flexible plates and fast drying inks".

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 is unclear because it depends from canceled claim 1. Based on the fact that Applicant did not indicate that the claim was currently amended and that the prior version depended from claim 9, it is assumed that Applicant intends the claim to depend from claim 9.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 9-10, 12, 14-15, 18, 20, 22, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pei et al. (U.S. Patent 5,682,043, hereafter '043) in view of Wright (U.S. Patent 3,661,081, hereafter '081), and Shinoda (U.S. Patent 5,674,553, hereafter '553). Ireton (U.S. Patent 4,611,539, hereafter '539) is cited as evidence.

'043 teaches a method of patterning an electroluminescent (EL) display (cols. 1-2), comprising:

flexographic printing a semiconductor polymer ink (col. 10, lines 14-28), which is the light-emitting layer (col. 7, line 13-col. 9, line 28).

Ireton '539 teaches that flexography is understood in the art to mean providing a flexible printing plate (i.e., a molding plate) adhered to (i.e., disposed on) a plate cylinder or printing roller (i.e., a molding roller), said molding plate having a raised image (i.e., convex and concave portions, with the convex portion (the raised image) defining lands), applying the ink to the raised portion (i.e., each land of the convex portion of the molding plate) and printing the ink from the molding plate onto a substrate by rotating the roller so that the land on each convex portion contacts the substrate.

'043 (and the definition given by Ireton) does not explicitly teach a plurality of convex and concave portions. However, '043 does indicate that different inks may be desired in different locations (col. 7, lines 12-20). Wright '081 illustrates a flexographic process and makes it clear that there may be a plurality of convex printing portions (5) and concave non-printing

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portions (6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a flexographic plate with a plurality of convex and concave regions with a reasonable expectation of success because '043 indicates that areas with different properties are desired and because '081 teaches that a method of depositing inks in desired areas is to have a plurality of convex and concave regions.

'043 teaches that different materials may be printed in different locations, for example, to apply different colors (col. 7, lines 12-20). It does not explicitly teach the use of barrier ribs between pixels. However, the Examiner takes Official Notice that it is notoriously well known in the art of electroluminescent devices to use barrier ribs between pixels of different colors in order to provide contrast between the pixels. See, for example, '553. '553 teaches that pixel electrodes (22) may be formed between barrier ribs (29). See Fig. 20 and 22C. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '043 and '081 to have printed pixels on electrodes between barrier ribs because '553 teaches that such is an operative formation for particular EL devices. The barrier layers of '553 would inherently spread.

'043 teaches that different materials may be printed in different locations, for example, to apply different colors (col. 7, lines 12-20). It does not explicitly teach that the colors are red, blue, and green. However, the Examiner takes Official Notice that it is notoriously well known in the art of electroluminescent devices to use red, green, and blue as the colors because red, green, and blue light can be combined to create any color of light. See, for example, '553, Figs. 1-2.

'043 teaches that the polymer may be applied in solution (col. 10, lines 14-17).

Claims 12 and 20: The barrier ribs of '553 form striped boundaries between pixels.

Claim 14: '553 teaches that the height of the barrier rib is larger than the combined thickness of the EL material and pixel electrode. See Fig. 20.

Claim 15: '553 teaches that the spacers may be glass (SiO<sub>2</sub>) (col. 12, lines 9-12).

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Claim 18: '081 teaches that the ink may be supplied to the convex portions of the flexographic roller by rotating it and a supply roller (9) (Fig. 1, col. 3, lines 41-49).

Claim 22: '043 teaches that the layer may be 500 angstroms thick (col. 11, lines 11-13).

Claim 25: '043 teaches that the substrate may be glass (col. 12, lines 27-30).

8. Claims 13, 16, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pei '043 in view of Wright '081, and Shinoda '553 as applied to claim 9 above, and further in view of Himeshima et al. (U.S. Patent 6,592,933, hereafter '933).

Claims 13 and 28: '043, '081, and '539 teach the features of claim 9, as discussed above, but the references do not explicitly teach that a spacer may overlap the anode. However, '933 teaches that an upper portion of the barrier ribs (3) may overlap the edge of pixel electrodes (2) (See Fig. 14) to form an inter-layer insulation layer (col. 9, lines 13-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used overlapped the pixel electrodes of '553 with an upper portion of its barrier ribs 29 because '933 indicated that such a configuration would have advantageously provided an inter-layer insulation layer.

Claim 16: '933 teaches a list of known materials for spacers in EL devices. The spacers include polyimide (col. 9, lines 21-46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polyimide as the spacer material because the selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 29: '553 teaches that the height of the barrier rib is larger than the combined thickness of the EL material and pixel electrode. See Fig. 20.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pei '043 in view of Wright '081, and Shinoda '553 as applied to claim 9 above, and further in view of Mourrellone (U.S. Patent 4,542,693, hereafter '693).

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'043, '081, and '539 teach the features of claim 18, as discussed above. '081 teaches that the amount of ink on the supply roller may be controlled, but the references do not explicitly teach causing the EL material to have a uniform thickness on the supply roller.

'693 teaches for a device comprising a letterpress (col. 1, lines 1-16) ink cylinder (T) and supply roller (A) that the provision of an equalizing roller (9) that provides an ink layer of uniform thickness on supply roller (A) (claim 8) advantageously improves the regularity of ink application and avoids the formation of undesired stripes (col. 7, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have caused the EL ink of '504 to have had a uniform thickness on the supply roller by using the equalizing roller of '693 because '693 teaches that such an equalizing roller would have improved the regularity of the ink application and avoided the formation of undesired stripes.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pei '043 in view of Wright '081, and Shinoda '553 as applied to claim 9 above, and further in view of Nagayama et al. (U.S. Patent 5,701,055, hereafter '055).

'043, '081, and '553 are discussed above, but do not explicitly teach that the barrier ribs are in the form of a matrix. However, '055 teaches an alternate arrangement for spacers and EL layers of EL devices. '055 teaches that pixel electrodes (22) may be a matrix between pixels. See Figs. 1 and 19. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '043 and '081 to have printed pixels on electrodes between a matrix of barrier ribs because '055 teaches that such is an operative formation for particular EL devices.

11. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pei '043 in view of Wright '081, and Shinoda '553 as applied to claim 9 above, and further in view of Watanabe et al. (U.S. Patent 5,270,846, hereafter '846).

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'043, '081, and '553 teach the features of claim 9, as discussed above. '081 teaches that flexographic inks assume level surfaces (col. 1, lines 23-26), but does not explicitly teach that the ink levels after printing. However, '846 also teaches that inks printed from rollers may also be leveled after printing (col. 12, lines 28-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have leveled the surface on the ink after printing in order to have achieved the desired thickness.

Claim 24: '043 teaches that the layers are heated after printing (col. 11, lines 11-15).

12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pei '043 in view of Wright '081, and Shinoda '553 as applied to claim 9 above, and further in view of Samworth (U.S. Patent 6,213,018, hereafter '018).

'043, '081, and '553 teach the features of claim 9, as discussed above. They do not explicitly teach a plurality of indentations along the lands for assisting pickup of the ink. However, '018 teaches that it is known in the art of flexographic printing to contain the inks in indentations on the surface (col. 5, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a flexographic printer with a plurality of ink-containing indentations with a reasonable expectation of success because '018 teaches that such are suitable flexographic printers.

### ***Response to Arguments***

13. Applicant's arguments filed 3/3/2006 have been fully considered but they are not persuasive.

Applicant's remarks regarding that the limitation of preventing spread are present in the claims are noted and correct. Applicant's arguments that Himeshima's spacers would not prevent spread are unconvincing because Shinoda's would.

Applicant argues that Pei does not need barrier ribs because Pei's printed material will be at the desired location. The argument is unconvincing because it does not address the rejection. The use of spacers is notoriously well known in the art of display devices both to provide contrast ('933, col. 9, lines 33-36) and/or to provide a desired gap between the phosphor and a back substrate ('553, Fig. 3).



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Applicant's arguments that Himeshima and Shinoda would be inoperative without spacers are unconvincing because they are unsupported by evidence. The arguments would not be convincing even if they were supported by evidence because the selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Himeshima and Shinoda (and Nagayama for that matter) all demonstrate the very conventional use of spacers in EL devices for assorted reasons.

Applicant's arguments regarding Himeshima do not address the teachings of Shinoda that the spacers should be taller than the anode plus EL layer.


### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bayer, Jr. (U.S. Patent 5,597,618) and Pappas et al. (U.S. Patent 5,162,119) are cited for their teachings regarding the relative orientation of substrates and printer rollers.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michael Cleveland  
Primary Examiner  
Art Unit 1762

4/23/2006